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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,056	02/04/2002	Shinya Hirai	1232-4813	4044
27123	7590	12/29/2005	EXAMINER	
MORGAN & FINNEGAN, L.L.P. 3 WORLD FINANCIAL CENTER NEW YORK, NY 10281-2101			JERABEK, KELLY L	
			ART UNIT	PAPER NUMBER
			2612	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/067,056	HIRAI, SHINYA	
	<b>Examiner</b> Kelly L. Jerabek	<b>Art Unit</b> 2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 30 September 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 9-11,19-21,27-29 and 35-37 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,2,12-15,22,23 and 30-34 is/are rejected.
- 7) Claim(s) 3-8,16-18 and 24-26 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date: _____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date: _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

**DETAILED ACTION**

***Election/Restrictions***

Applicant's election with traverse of the first species pertaining to claims 1-8, 12-18, 22-26, and 30-34 in the reply filed on 9/30/2005 is acknowledged. The traversal is on the ground(s) that undue diverse searching would not be required in searching for all of the species. This is not found persuasive because this argument only applies to restrictions. In order to traverse a species election, Applicant must submit evidence showing that the species are not patentably distinct. **Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.**

The requirement is still deemed proper and is therefore made FINAL.

***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

**Claims 30-34 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.**

Claims 30-34 discloses "An operation process program for interpolating an output color signal from an image sensing device, comprising: ...". MPEP 2106 states "Since a computer program is merely a set of instructions capable of being executed by a computer, the computer program itself is not a process and a claim for a computer program, without the computer-readable medium needed to realize the computer program's functionality, should be treated as nonstatutory functional descriptive material". Claims 30-34 do not claim the computer-readable medium needed to realize the computer program's functionality.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 14, 22, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishiwaki JP 09-084031.**

Re claims 1, 14, 22, and 30 Nishiwaki discloses a signal processing apparatus and method for interpolating an output color signal from an image sensing device, comprising: a first interpolating device (31) that performs interpolation in a pixel position as an object of interpolation on the basis of pixel data in first (horizontal) and second (vertical) directions; a second interpolating device (26) that performs interpolation in a pixel position as an object of interpolation on the basis of pixel data in the first (horizontal) direction; a third interpolating device (27) that performs interpolation in a pixel position as an object of interpolation on the basis of pixel data in the second (vertical) direction (paragraphs 36-38); a determining device (24) that determines correlations in the first (horizontal) and second (vertical) directions with respect to a signal at a pixel position as an object of interpolation; a selecting device (32) that

selects interpolated data based on an output from one of said second and third interpolating device, on the basis of the determination result from said determining device (paragraphs 38-45); and an output device (33) that outputs an interpolated signal on the basis of interpolated data, which is based on an output from said first interpolating device (31), and the output interpolated data from said selecting device (32) (paragraphs 63-65).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 12-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiwaki JP 09-084031.**

Re claims 12-13, Nishiwaki discloses all of the limitations of claim 1 above. However, Nishiwaki fails to distinctly state that the image sensor has pixels that are offset and color filters having a Bayer arrangement. The Examiner takes **Official Notice** that it is well known for image sensors to have offset pixels and color filters

arranged in a Bayer arrangement. Therefore, it would have been obvious for one skilled in the art to have been motivated to include an image sensor including offset pixels and a color filter having a Bayer arrangement in the signal processing apparatus disclosed by Nishiwaki. Doing so would provide a means for effectively capturing and processing a color image signal.

**Claims 2, 15, 23, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiwaki in view of Yamamoto et al. US 6,611,287.**

Re claims 2, 15, 23, and 31, Nishiwaki discloses all of the limitations of claims 1, 14, 22, and 30 above. However, Nishiwaki fails to state that the output device outputs an interpolated signal by weighting the interpolated data based on output from the first interpolating device and the output interpolated from the selected device.

Yamamoto discloses a camera signal processing apparatus including an interpolated pixel data generating device for interpolating pixel data in two directions. Yamamoto states that the camera signal processing apparatus includes a correlation value detecting block (16) for detecting a correlation value between pieces of image data and a weighted addition circuit (22) for weighting the interpolated image data by the use of the correlation value generated by the correlation value detecting block (16) (col. 4, line 66-col. 5, line 17). Therefore, it would have been obvious for one skilled in the art to have been motivated to include the method of weighting interpolated signal data as disclosed by Yamamoto in the signal processing apparatus disclosed by

Nishiwaki. Doing so would provide a means for applying different weights to interpolated image signals that are selected based on a correlation value (Yamamoto: col. 2, lines 33-48).

***Allowable Subject Matter***

**Claims 3-8, 16-18, and 24-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

The following is a statement of reasons for the indication of allowable subject matter:

Re claims 3, 16, and 24, the prior art fails to teach or fairly suggest "A signal processing apparatus for interpolating an output color signal from an image sensing device, comprising: a first interpolating device...; a second interpolating device...; a third interpolating device...; a determining device...; a selecting device...; an output device...; wherein if said determining device is expected to determine that the correlation in the first an second directions would become equal, said output device generates an interpolated signal by performing weighting such that the interpolated data based on the output from said first interpolating device is weighted more than the output interpolated data from said selecting device".

Re claims 4, 17, 25, the prior art fails to teach or fairly suggest "A signal processing apparatus for interpolating an output color signal from an image sensing device, comprising: a first interpolating device...; a second interpolating device...; a third interpolating device...; a determining device...; a selecting device...; an output device...; wherein said second interpolating device performs interpolation on the basis of pixel data, in the first direction, over a broader range than that when said first interpolating device performs interpolation".

Re claims 5, 18, 26, the prior art fails to teach or fairly suggest "A signal processing apparatus for interpolating an output color signal from an image sensing device, comprising: a first interpolating device...; a second interpolating device...; a third interpolating device...; a determining device...; a selecting device...; an output device...; wherein said third interpolating device performs interpolation on the basis of pixel data, in the second direction, over a broader range than that when said first interpolating device performs interpolation".

Re claims 6-8, the prior art fails to teach or fairly suggest "A signal processing apparatus for interpolating an output color signal from an image sensing device, comprising: a first interpolating device...; a second interpolating device...; a third interpolating device...; a determining device...; a selecting device...; an output device...; wherein said selecting device selects on of a difference between the output

interpolated data from said second interpolating device and the output interpolated data from said first interpolating device, and a difference between the output interpolated data from said third interpolating device and the output interpolated data from said first interpolating device”.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kobayashi (US 6,714,242) discloses an image processing apparatus. The information regarding correlation and interpolation is relevant material.

Ohashi (US 6,278,803) discloses an interpolation apparatus for offset sampling signals. The information regarding vertical and horizontal interpolation is relevant material.

Maenaka et al. (US 5,552,827) discloses a color video camera with a solid-state image sensing device. The information regarding vertical and horizontal interpolation is relevant material.

Endo et al. (US 6,853,748) discloses a signal processing apparatus for reducing generation of false color by adaptive luminance interpolation. The information regarding vertical and horizontal interpolation is relevant material.

Hibbard (US 5,382,976) discloses an apparatus and method for adaptively interpolating a full color image utilizing luminance gradients. The information regarding interpolation is relevant material.

Murata et al. (US 5,325,182) discloses a video signal processing circuit incorporated in an integrated circuit. The information regarding vertical and horizontal interpolation is relevant material.

Murata et al. (5,333,055) discloses a video camera circuit for processing image signals from an image pickup device having a mosaic color filter. The information regarding vertical and horizontal interpolation is relevant material.

Sasaki et al. (US 5,202,756) discloses a color signal processing apparatus using plural luminance signals. The information regarding interpolation is relevant material.

Maenaka et al. (US 5,555,023) discloses a signal processing circuit for a video camera which prevents a false aperture signal from being generated. The information regarding correlation and interpolation is relevant material.

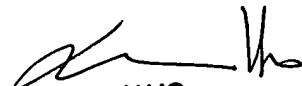
### **Contacts**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly L. Jerabek whose telephone number is **(571) 272-7312**. The examiner can normally be reached on Monday - Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc Yen Vu can be reached on **(571) 272-7320**. The fax phone number for submitting all Official communications is 703-872-9306. The fax phone number for submitting informal communications such as drafts, proposed amendments, etc., may be faxed directly to the Examiner at **(571) 273-7312**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KLJ



TUAN HO  
PRIMARY EXAMINER